What Is Claimed Is:

1. A router circuit having a plurality of electrical input signals comprising:

an electrical-to-optical converter for changing the plurality of electrical input signals into a plurality of optical input signals;

a mixing circuit coupled to the electrical-to-optical converter, said mixing circuit generating a plurality of substantially identical composite signals corresponding to the plurality of optical inputs, said composite signals comprising at least a portion of each of said plurality of optical signals;

a plurality of optical bandpass filters coupled, respectively, to each one of said plurality of composite signals, said plurality of bandpass filters passing a portion of said optical signal to form a plurality of filtered signals, and

an optical-to-electrical converter circuit coupled to the plurality of bandpass filters, said optical-to-electrical converter converting said plurality of filtered optical signals into a plurality of respective electrical output signals.

2. A router circuit as recited in claim 1 wherein said plurality of bandpass filters comprises a respective plurality of center wavelengths.

3. A router circuit as recited in claim 2 further comprising a control circuit coupled to said electrical-to-optical converter, wherein said electrical-to-optical converter comprises a plurality of electrical-to-optical converters, said control circuit selecting a respective

plurality of electrical-to-optical converter wavelengths in response to said plurality of bandpass center wavelengths.

4. A router circuit as recited in claim 3 wherein said plurality of wavelengths of the electrical-to-optical converter is tunable.

5. A router circuit as recited in claim 2 wherein said plurality of center wavelengths of the plurality of bandpass filters is tunable.

6. A router circuit as recited in claim 1 wherein said electrical-to-optical converter comprises a plurality of electrical-to-optical converters.

7. A router circuit as recited in claim 1 wherein said mixing circuit comprises at least a first plurality of mixers cross coupled with a second plurality of mixers.

8. A router circuit as recited in claim 1 wherein said electrical-to-optical converter comprises a modulated tunable laser having a programmed wavelength.

9. A router circuit as recited in claim 8 wherein said tunable laser is coupled to a control circuit and a temperature sensor, said control circuit tuning said laser in response to said temperature sensor to maintain the programmed wavelength.

10. A router circuit as recited in claim 1 further comprising a clock circuit, said clock circuit comprising a clock electrical-

to-optical converter, an optical delay line and an optical-to-electrical converter.

11. A router circuit as recited in claim 10 wherein said optical delay line comprises an optical fiber.

12. A router circuit as recited in claim 1 wherein said optical-to-electrical converter comprises a photodiode.

13. A router circuit as recited in claim 1 wherein said mixing circuit comprises a passive star power splitter.

14. A satellite system comprising:

said electrical inputs comprising RF inputs;

a router circuit as recited in claim 1.

15. A satellite system as recited in claim 14 further comprising a buffer circuit receiving said plurality of RF signals, said buffer circuit synchronizing said electrical input signals within a predetermined tolerance before the router

16. A router circuit comprising:

an electrical-to-optical converter changing electrical inputs into optical signals;

a first mixing circuit coupled to a first group of said plurality of optical signals, said first mixing circuit having a first output and a second output, said first output and second output each having a first composite signal comprising said first group of optical signals;

a second mixing circuit coupled to a second group of said plurality of optical signals, said second mixing circuit having a third output

and a fourth output, said third output and fourth output each having a second composite signal comprising said second group of optical signals;

a third mixing circuit coupled to said first and third outputs, said third mixing circuit generating a third composite signal comprising said first composite signal and said second composite signal;

a fourth mixing circuit coupled to said second output and fourth output, said fourth mixing circuit generating a fourth composite signal comprising said first composite signal and said second composite signal;

a bandpass filter circuit coupled to said third mixing circuit and said fourth mixing circuit, said bandpass filter circuit comprising a first and a second optical bandpass filter, said first bandpass filter coupled to said third composite signal for generating a first optical output and a second bandpass filter coupled to said fourth composite signal for generating a second optical output; and

an optical-to-electrical converter circuit coupled to said bandpass filter circuit for converting said first optical output to a first electrical output and said second optical output to a second electrical output.

17. A router circuit as recited in claim 16 wherein said electrical-to-optical converter comprises a modulated tunable laser.

18. A router circuit as recited in claim 17 wherein said tunable laser is coupled to a control circuit and a temperature sensor, said control circuit controlling said laser in response to a desired router operation and said temperature sensor

19. A router circuit as recited in claim 16 further comprising a clock circuit, said clock circuit comprising a clock electrical-to-optical converter, an optical time delay circuit and an optical-to-electrical converter.

20. A router circuit as recited in claim 16 wherein said optical-to-electrical converter comprises a photodiode.

21. A router circuit as recited in claim 16 wherein said first mixing circuit and said second mixing circuit comprise a respective first star power splitter and a second star power splitter.

22. A method of operating a routing circuit comprising:

converting a plurality of electrical signals to a respective plurality of modulated optical signals;

coupling the plurality of modulated optical signals to a cross connect switch;

forming a plurality of composite signals at a plurality of outputs of the cross-connect switch, said plurality of composite signals composed of said modulated optical signals;

converting each of the composite signals into an electrical output signal corresponding to a portion of said modulated optical signals.

23. A method as recited in claim 22 further comprising synchronizing the output signal using a clock signal.

24. A method as recited in claim 22 wherein synchronizing comprises delaying the clock signal an amount

corresponding to a delay of the cross-connect switch, to obtain a delayed clock signal.

25. A method as recited in claim 22 wherein converting a plurality of electrical signals to a respective plurality of modulated optical signals comprises modulating a respective plurality of diode lasers, each of which is tuned to the center wavelength of a bandpass filter.